Hyperspace Travel

A group of n friends living in an m-dimensional hyperspace want to meet up at some central location. The hyperspace is in the form of an m-dimensional grid, and each person can only move along grid lines. For example, to go from $(0,0) \rightarrow (1,1)$ in a 2-dimensional space, one possible route is $(0,0) \rightarrow (0,1) \rightarrow (1,1)$ for a total distance traveled of 2 units.

Given the coordinates, $(X[0,1,\ldots,m-1])$, for n friends, find a point at which all n friends can meet such that the total sum of the distances traveled by all n friends is minimal. If there are multiple such points, choose the lexicographically smallest one. The point $P_1[0,1,\ldots,m-1]$ is lexicographically smaller than $P_2[0,1,\ldots,m-1]$ if there exists such $j < m$ that $\forall i < j\, P_1[i] = P_2[i]$ and $P_1[j] < P_2[j]$.

Input Format

The first line contains two space-separated integers describing the respective values of n and m.
Each line i of the n subsequent lines contains m space-separated integers describing the respective coordinates (i.e., $x_0, x_1, \ldots, x_{m-1}$) for friend i.

Constraints

- $1 \leq n \leq 10^4$
- $1 \leq m \leq 10^2$
- $-10^9 \leq x_i \leq 10^9$

Output Format

Print m space-separated integers describing the coordinates of the meeting point.

Sample Input

```
3 2
1 1
2 2
3 3
```

Sample Output

```
2 2
```

Explanation

There are $n = 3$ friends (we'll call them a, b, and c) located at points $a = (1,1)$, $b = (2,2)$, and $c = (3,3)$. The minimal solution is for friends a and c to meet at friend b's current location; this means a travels 2 units from $(1,1)$ to $(2,2)$, c travels 2 units from $(3,3)$ to $(2,2)$, and b stays put at $(2,2)$. The total distance traveled by all friends is $2 + 0 + 2 = 4$, which is minimal. Thus, we print $m = 2$ space-separated integers describing the coordinate where the $n = 3$ friends meet: `2 2`.